Staff Report

Placer County Department of Facility Services
Placer County Sewer Maintenance District No. 1
Wastewater Treatment Plant
Placer County

Treatment System

Placer County Department of Facility Services, Placer County Sewer Maintenance District No. 1 (Discharger) owns and operates a wastewater collection, treatment, and disposal system, and provides sewerage service to the unincorporated area of North Auburn in Placer County, which serves a population of approximately 15,000 and includes most of the industrial area of the City of Auburn.

The WWTP currently provides tertiary treatment when influent flows are 3.5 mgd or less and a mixture of secondary and tertiary treatment when flows are greater than 3.5 mgd. The WWTP consists of the following: Headworks: influent flow meter, comminution, and aerated grit removal; Primary Clarification: two rectangular primary clarifiers; Secondary Treatment: three Rotating Biological Contactors (RBCs), two trickling filters, and four circular clarifiers; Intermediate and final clarification is provided by the four circular clarifiers; Gravity Filtration: six gravity filters with anthracite media; Disinfection: three chlorine contact chambers and dechlorination; Sludge Treatment: primary and secondary digesters, belt press, and sludge drying beds; sludge is treated in the digesters and removed to the belt press or sludge drying beds for liquid removal. The dewatered sludge is disposed at a landfill.

Receiving Waters

Treated municipal wastewater is discharged Rock Creek. The discharge point on Rock Creek is approximately 200 feet upstream of Dry Creek. In approximately 1.7 miles, Dry Creek merges with Orr Creek and is called Coon Creek. In western Placer and eastern Sutter Counties, downstream of the Nevada Irrigation District (NID) Diversion Dam, Coon Creek flows approximately 25 miles through a relatively flat area where the flow meanders and splits into several channels, including Main Canal, Bunkham Slough, Markham Ravine, and East Side Canal. Flow from these channels eventually enters Natomas Cross Canal. Flow from Natomas Cross Canal enters the Sacramento River just below the confluence with the Feather River. The total distance from the discharge point on Rock Creek to the Sacramento River is approximately 34.5 miles.

In addition, an NID Diversion Dam pulls water from Coon Creek into Camp Far West Ditch or Canal. Water from Camp Far West Ditch follows several flow paths to the Bear River, which is tributary to the Feather River and the Sacramento River.

Beneficial Uses

The permit and Information Sheet exhaustively discuss the beneficial uses of the receiving stream and downstream waters. The beneficial uses are summarized in this staff report from the permit and Information Sheet. The Basin Plan identifies existing and potential beneficial uses for bodies of water to which Rock Creek, Dry Creek, and Coon Creek are tributary, as follows:

a. The discharge ultimately enters a section of the Sacramento River between the Colusa Basin Drain and I Street Bridge, the first body of water downstream of Rock Creek, via Natomas Cross Canal, for which the Basin Plan has identified existing beneficial uses. The beneficial uses of the Sacramento River, between the Colusa Basin Drain and I Street Bridge, as identified in Table II-1 of the Basin Plan, are municipal and domestic supply, agricultural irrigation, water contact recreation including canoeing and rafting, non-contact water recreation including aesthetic enjoyment, warm and cold freshwater habitats including preservation or enhancement of fish and invertebrates, migration habitat for warm and cold water species, warm and cold water spawning habitat, wildlife habitat, and navigation. Other beneficial uses identified in the Basin Plan apply to the Sacramento River, between the Colusa Basin Drain and I Street Bridge, including groundwater recharge, freshwater replenishment, and preservation of biological habitats of special significance (including the Sacramento San Joaquin Delta).

b. Rock Creek, Dry Creek, and Coon Creek are also tributary to Camp Far West Reservoir and the Bear River via Camp Far West Ditch. The Bear River is the first body of water downstream of Rock Creek, for which the Basin Plan has identified existing beneficial uses. Table II-1 of the Basin Plan identifies existing and potential beneficial uses for the Bear River, including municipal and domestic supply, agricultural irrigation and stock watering, power supply, water contact recreation including canoeing and rafting, non-contact water recreation including aesthetic enjoyment, warm and cold freshwater habitats including preservation or enhancement of fish and invertebrates, migration habitat for warm and cold water species, warm and cold water spawning habitat, and wildlife habitat. Other beneficial uses identified in the Basin Plan apply to the Bear River, including groundwater recharge and freshwater replenishment. Upon review of the flow conditions, habitat values, and beneficial uses of Coon Creek, Dry Creek, and Rock Creek, the beneficial uses identified in the Basin Plan for the Bear River are applicable to Coon Creek, Dry Creek, and Rock Creek.

In reviewing whether existing and potential uses of the Sacramento River, between the Colusa Basin Drain and the I Street Bridge, and for the Bear River, are applicable to Coon Creek, Dry Creek, and Rock Creek, the following facts were considered:

Municipal and Domestic Supply and Agricultural Irrigation and Stock Watering Supply:

Municipal, domestic and food crop irrigation beneficial uses have been site-specifically confirmed for waters downstream of the wastewater treatment plant and State Board Resolution No. 88-63 requires the Regional Board to assign the beneficial uses of municipal and domestic supply, to Rock Creek, Dry Creek, and Coon Creek.

The State Water Resources Control Board (SWRCB) has issued numerous water rights, for domestic and irrigation uses, on Main Canal and downstream waters, the Sacramento River, the Bear River, and the Feather River, downstream of the discharge. Many of the waterways downstream of the discharge are managed by irrigation districts and retain the domestic and irrigation beneficial uses. Nevada Irrigation District (NID) controls the flows in Dry Creek, Coon Creek, and Camp Far West Ditch. Staff of NID confirmed the existence of domestic uses of this water by reporting that water from Camp Far West Ditch is utilized for in-home use. NID requires the homeowner to purchase 5 gallons of bottled drinking water per month. NID sells water from Coon Creek and Camp Far West Ditch and has assessed the principal uses as family garden use and pasture irrigation. Over a distance of approximately 25 miles on Camp Far West Ditch, there are 37 irrigation customers, two of whom have irrigation water connected to their homes.

Riparian Rights, for landowners along streams and rivers, are not recorded with the SWRCB and have precedence over other water rights and may include domestic and municipal uses. The wastewater discharge occurs in a residential area and the effluent immediately flows through numerous yards lining the Creek. Home garden irrigation has been identified as an existing beneficial use of the receiving stream.

Water Contact and Non-contact Water Recreation (including canoeing, rafting, and aesthetic enjoyment)

Regional Board staff surveyed the residents along Dry Creek and found recreational and irrigation use of the receiving stream commonly cited. Several swimming and picnic areas were observed on the banks of Dry Creek and Coon Creek. Properties along Dry Creek and upper Coon Creek are single-family dwellings. The properties have relatively flat terrain that slopes down to the Creeks in their back yards. There is easy public access to Rock Creek, Dry

Creek, Coon Creek, Camp Far West Ditch, Camp Far West Reservoir, the Bear River, the Feather River, and to the sloughs and canals that are downstream of Coon Creek, Natomas Cross Canal, and the Sacramento River. Public use is likely to increase as the population increases. Exclusion or restriction of public use is unrealistic.

Hikers and campers, in the relatively uninhabited areas near the discharge point, Rock Creek, Dry Creek, upper Coon Creek, and Camp Far West Ditch have a reasonable expectation that those waters are as unpolluted as similar streams in the vicinity.

Camp Far West Reservoir, the Bear River, the Feather River, and the Sacramento River are also used extensively for contact and non-contact recreation.

Warm and Cold Freshwater Habitats (including preservation and enhancement of fish, invertebrates, and other aquatic resources), Warm and Cold Spawning Habitats, Warm and Cold Migration Habitats, and Wildlife Habitat

The wastewater is discharged into Rock Creek, which flows into Dry Creek, Coon Creek, and downstream waters. The California Department of Fish and Game (DFG) has verified the presence of fish species consistent with both warm water fisheries and cold-water fisheries for salmonids. Fish surveys have not been extensively conducted in the immediate receiving streams, however DFG staff have confirmed that oversummering of cold-water fish species in deeper pools within the Creek is reasonable. Riparian habitats are also a by-product of drainages and canals and provide numerous habitats for birds and mammals.

Upstream of the discharge from the WWTP, flows in Rock Creek and Dry Creek are both dependent on the flows released from upstream reservoirs. General information, from U.S. Geological Survey maps and site visits, indicates that Rock Creek and Dry Creek were intermittent streams prior to the year-round discharge. Based on the available information, Rock Creek and Dry Creek currently are low-flow or intermittent streams in the absence of the discharge from the WWTP or the upstream reservoirs. Due to the low-flow/intermittent nature of the flows in the Creeks, no credit for receiving water dilution is available. Although the discharge flows may maintain aquatic habitat during low flow conditions, constituents may not be discharged that may cause harm to aquatic life. At other times, natural flow and released flows help support cold-water aquatic life. Dry weather and low flow conditions occur primarily in the summer months but also occur throughout the year, particularly in low rainfall years. Significant dilution may occur during and after high rainfall events. However, the lack of available dilution during low

flow periods results in more stringent effluent limitations to protect recreational uses, drinking water supplies, agricultural irrigation supplies, and aquatic life.

At times, treated wastewater may be the main (or only) source of stream flow, with little or no dilution from natural flow, particularly in Rock Creek. The worst-case dilution in Rock Creek and Dry Creek is assumed to be zero to provide protection for the receiving water beneficial uses. The impact, of assuming zero dilution within the receiving water, is that discharge limitations must be end-of-pipe limits, rather than allowing for dilution provided by the receiving water.

Tertiary Treatment

The wastewater discharged from the WWTP into Rock Creek, and downstream waters, is reused for municipal, domestic, contact recreation, agricultural irrigation, and aquatic life beneficial uses. To protect these beneficial uses, the wastewater must be disinfected and adequately treated to prevent disease.

Tertiary treatment, or equivalent, is necessary to protect the beneficial uses of the receiving stream. The Discharger's wastewater treatment system provides tertiary treatment. However, in the recent past, flows greater than approximately 2 mgd were routed around the gravity filters to the chlorine contact basins to avoid backflow into the secondary clarifiers. Recently completed plant improvements will allow maximum usage of the gravity filters (flow of up to 3.5 mgd) during high flows. However, excessive wet weather flows, due to inflow and infiltration (I/I), have exceeded 8 mgd. Currently, flows in excess of 3.5 mgd will be routed around the gravity filters and flow directly to the chlorine contact basins. When flow is greater than 3.5 mgd, the tertiary treated wastewater from the gravity filters will mix with secondary treated wastewater that bypassed the gravity filters. Discharged wastewater will be some combination of tertiary and secondary wastewater. The proposed Order provides that rerouting wastewater around the gravity filters will continue to be necessary for flows above 3.5 mgd and requires the Discharger correct the source of excessive I/I or build additional filtration capacity to provide tertiary treatment or equivalent for all wastewater flows.

The requirement to provide tertiary treatment, or equivalent, is based on Regional Board staff's documentation of contact recreation, food crop irrigation and municipal and domestic uses of the receiving stream. Tertiary or equivalent treatment is consistent with the reclamation requirements of California Code of Regulations Title 22, and recommendations from the California Department of Health Services (DHS) contained in *Wastewater Disinfection for Health Protection* (1987), *Technical Justification for the Dilution Ratio for Secondary Effluent* (SDHS), the *Uniform Guidelines for the Disinfection of Wastewater* (1987) and the *Department of Health Services*

Recommendations for Waste Discharge Requirements (1 July 2003).

Prior to permit renewal, anticipating a requirement to provide full tertiary treatment, the Discharger consulted with DHS staff. In a 15 July 2003 letter to Regional Board staff regarding conditions at SMD1 specifically, after their review of costs to expand to year-round tertiary and the high influent flow rates, DHS noted several exceptions to the need for tertiary treatment at SMD1 as follows:

"1. The plant is subject to very high flow rates during, and immediately following storm events. Plant flow that exceeds the capacity of the filters can be allowed to bypass the filtration process during these events, provided the filter capacity is at least 30% greater than the permitted average dry weather flow.

2. A 30-day median coliform bacteria count of 2.2 MPN/100 ml can be allowed during the cold weather season. This season can be defined either on the basis of months (e.g., November 1 through April 30), or by receiving water temperature. If you decide to implement the latter, we recommend that the 'cold weather season' be defined as beginning when the seven day median receiving water temperature first falls below 60°F, and ending when the seven-day median receiving water temperature first rises above 60°F."

The DHS recommendation will not protect contact recreation, food crop irrigation and domestic and municipal beneficial uses during periods when the receiving water temperature is less than 60^{o} F and effluent flows exceed 3.5 mgd. The beneficial uses of the receiving waters immediately downstream of the discharge have been well documented. There is no documentation that water contact recreational activities cease at 60^{o} F. The DHS has not recommended notification of downstream users that the surface water will not be protective of contact recreation or food crop irrigation uses during this period. The DHS recommendation assumes that the documented "domestic" water users are protected by the requirement by NID to purchase 5-gallons of bottled drinking water per month per home, but does not address non-drinking uses such as showering or dish washing. DHS made their recommendation absent technical documentation regarding the receiving stream beneficial uses. The discharge of blended secondary effluent, compared to a full tertiary discharge, will result in the discharge of additional pollutants. The assessment of compliance with CTR standards and water quality objectives was based on tertiary treatment, and the blended discharge will likely not comply, threatening to degrade numerous beneficial uses, including the protection of aquatic life and drinking water. A full tertiary level of treatment, or equivalent, is necessary to protect the beneficial uses of the receiving stream.

Based, in part, on analysis of the cost of additional filter units at the El Dorado Irrigation District's Deer Creek facility, the Discharger has estimated that the construction cost to achieve year-round filtration, with the same type of filters already at SMD1, is approximately $1,000,000 per million gallons per day of additional capacity, or a

minimum of $5,000,000. This assumption is based on average dry weather design flow rates. Utilizing the operational range of treatment systems at peak wet weather flow conditions, installation of sufficient additional filters could cost significantly less than projected by the City. Peak wet weather flow rate is the problematic parameter at this facility with respect to providing tertiary treatment.

Regional Board and State Board staff gathered information relating to the City of Auburn Wastewater Treatment Plant improvements of several years ago. The City of Auburn installed new continuous backwash Dynasand Filters to handle 6 mgd of flow. The cost of the filters and associated infrastructure was $1.9 million. Included in the cost were concrete structures, pumps, a rapid mix tank, a chemical building, electrical work, piping, and the filters themselves. Accounting for inflation, the cost today would be approximately 20% higher, resulting in a cost of $2.2 - $2.3 million for filters and associated structures for a flow of 6 mgd. The approximate cost per million gallons would be $370,000 – $380,000. The initial costs are less with the Dynasand Filters but operation and maintenance costs are higher than other filters.

The cost of additional filtration is only necessary to offset the cost to treat excessive I/I wet weather flows. Reducing the I/I flows to an acceptable rate would eliminate the cost of additional filters. The cost of reducing the excessive I/I could not be assessed. The cost savings to the Discharger over the years for inadequate maintenance to the collection system could also not be assessed. The SMD-1 collection system consists of approximately 295,000 lineal feet of gravity sewer line. A corrective measure program over the years has resulted in only a little more than half of the system being TV'd for identifying I/I sources. Most of the system has been smoke tested to locate sources of inflow.

The loss of beneficial uses within downstream waters, without the tertiary treatment requirement, include prohibiting domestic uses, the irrigation of food crops and prohibiting public access for contact recreational purposes, would have a detrimental economic impact. In addition to pathogen removal to protect irrigation and recreation, tertiary treatment may also aid in meeting discharge limitations for other pollutants, such as heavy metals, reducing the need for advanced treatment.

Hardness and Effluent Limitations

Many of the pollutants limited in this Order are hardness and/or pH dependant. Information submitted by Nevada Irrigation District confirms that the water supply to the receiving stream is from various watersheds, which may have significantly different hardnesses. Review of the hardness data for the wastewater discharge also shows extended periods with high or low hardness confirming the varying sources of water supply. The low hardness of the receiving stream and the wastewater discharge could occur at the same time resulting in critical hardness values. Information submitted as a supplement to the Report of Waste Discharge shows, in part, the following critical hardness and pH values:

Effluent Hardness	R-1 Hardness	Effluent pH
61 mg/l	**20 mg/l**	**6.2 pH units**

The toxicity of several metals to aquatic life varies with hardness. As hardness concentrations decrease, the toxicity of these metals to aquatic life increases. The CTR Criteria for these metals and the Ambient Criteria for the Protection of Freshwater Aquatic Life are hardness-dependent. The monitoring data submitted by the Discharger contained effluent hardness data that ranged between 61 and 340 mg/l. In addition, the Discharger submitted hardness data for Rock Creek, upstream of the effluent discharge point, which ranged between 20 and 260 mg/l. As stated in Section 1.2 of the SIP, "*When implementing the provisions of this Policy, the RWQCB shall ensure that criteria/objectives are properly adjusted for hardness or pH, using the hardness or pH values for the receiving water…*" The worst-case conditions are represented when the hardness of Rock Creek is 20 mg/l. When assessing reasonable potential to cause or contribute to an in-stream excursion above water quality criteria, the upstream hardness of Rock Creek represents worst-case conditions. However, according to technical advise from SWRCB staff, Effluent Limitations based on upstream hardness may be overprotective, while the protection provided by Effluent Limits based on the hardness of the effluent is not certain. According to guidance from the SWRCB, use of the downstream hardness to establish Effluent Limitations is protective of beneficial uses. Therefore, to protect the aquatic habitat beneficial uses of the receiving waters, new concentration-based final Effluent Limitations based on the CTR Criteria and the hardness of the combined flow of Rock Creek and the effluent (Monitoring Point R2), are included in this Order. While the worst-case hardness may be utilized to determine reasonable potential, the Effluent Limitations vary with hardness by utilizing the hardness-dependant equations.

Effluent Limits

Mercury - The reported concentrations of Mercury do not exceed the CTR Human Health criterion, therefore, a concentration-based Effluent Limitation is not proposed.

However, the Effluent does contain a mass of Mercury, which may contribute to an increase in Mercury in the Sacramento-San Joaquin Delta. Therefore, a mass-based final Effluent Limitation for Mercury, in lbs/day, is included in the Order in accordance with the Code of Federal Regulations, 40 CFR 122.45(f).

Total coliform organisms – Requested seasonal limitations are not technically based and are not protective of the beneficial uses of the receiving stream since contact recreation, food crop irrigation and domestic uses can occur between November and May.

Tertiary treatment is generally considered to include primary and secondary treatment, with coagulation and filtration. U.S. EPA has not established performance standards for tertiary treatment. However, based on observed treatment capabilities, tertiary treatment is able to achieve both **BOD and TSS** levels of 10 mg/l as a Monthly Average, 15 mg/l as a Weekly Average, and 25 mg/l as a Daily Maximum, with a minimum 85% removal rate.

To provide Title 22 equivalent waters this Order contains final Effluent Limitations of 10 mg/l (Monthly Average), 15 mg/l (Weekly Average), and 25 mg/l (Daily Maximum), with a minimum 85% removal rate, for both BOD and TSS, when flow is less than or equal to 3.5 mgd. These Limitations are based on the design technical capability of tertiary treatment systems and no schedule is necessary for compliance. When flows are greater than 3.5 mgd, the gravity filters will be bypassed and the discharge from the plant will be some combination of tertiary and secondary treated wastewater. When flow is more than 3.5 mgd and the 7-Day Median temperature of the receiving water is less than 60 °F, and the filters are bypassed, this Order contains interim Effluent Limitations of 20 mg/l (Monthly Average), 30 mg/l (Weekly Average), and 50 mg/l (Daily Maximum), with an 85% removal rate. These effluent limits are midway between secondary and tertiary treatment capabilities and were in the previous Order, therefore, no compliance schedule is necessary

Existing Order No. 97-113 contains seasonal **turbidity** Effluent Limitations of 2 NTU as a Monthly Average and 5 NTU as a Daily Maximum from 1 May through 31 October. The existing Order contains no Turbidity limitation between 1 November and 30 April. Title 22 criteria for filtered wastewater require that Turbidity not exceed; (a) an average of 2 NTU in a 24-Hour period, (b) 5 NTU more than 5% of the time in a 24-Hour period, and (c) 10 NTU at any time. To provide Title 22 equivalent water, this Order contains final Effluent Limitations of 2 NTU as a 24-Hour Average and a Daily Maximum between 5 NTU and 10 NTU, as described above, when flow is less than or equal to 3.5 mgd. In the interim, this Order contains no turbidity limitations when flow is greater than 3.5 mgd and the 7-Day Median temperature of the receiving water is less than 60 °F.

There are also year-round Receiving Water Limitations for Turbidity based on Basin Plan numeric standards.

Section III of the Basin Plan contains a numeric Water Quality Objective for **pH**. Numeric Water Quality Objectives are commonly applied to the receiving water as Receiving Water Limitations. However, in this case, the flow of the receiving water has been characterized as a low flow/intermittent stream providing no dilution. Therefore, end-of-pipe Effluent Limitations for pH were included in previous Order No. 97-113 and in this Order. Receiving Water Limitations for pH are also included in the Order to provide a level of protection consistent with the Water Quality Objectives.

Section III of the Basin Plan contains Water Quality Objectives for the Central Valley Region. The Pesticide Water Quality Objectives, on page III.6.00 of the Basin Plan, states "*Total identifiable **persistent chlorinated hydrocarbon pesticides** shall not be present in the water column at concentrations detectable within the accuracy of analytical methods approved by the Environmental Protection Agency* [U.S. EPA] *or the Executive Officer*." A limitation was included in the proposed permit based on effluent sampling which showed the discharge has a reasonable potential to exceed the Basin Plan water quality objective.

The Basin Plan narrative **Toxicity** Water Quality Objective, on Page III-8.00, states: "all waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal or aquatic life". This Order does not allow dilution within the receiving stream. The previous Order and this Order contain an Effluent Limitation that requires that the survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than 70% for any one bioassay and 90% for the median of three or more consecutive bioassays. This Order and the corresponding Monitoring and Reporting Program also prescribe chronic toxicity monitoring and reporting protocols.

Aluminum can be toxic to aquatic organisms. Based on information submitted by the Discharger, Polyaluminum Hydroxychloride may be used as a coagulant before the wastewater flows to the gravity filters. The use of this coagulant increases the reasonable potential for the discharge of elevated concentrations of Aluminum to cause or contribute to an in-stream excursion above the Basin Plan narrative toxicity objective. The low pH and the low hardness cited in the U.S. EPA ambient criteria document exist here and are applicable to the discharge. The elevated concentrations of aluminum in the wastewater discharge present a reasonable potential to cause aquatic toxicity. The Basin Plan contains a narrative objective requiring that: "all waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal or aquatic life." With respect to narrative objectives, the Regional Board

must establish effluent limitations using one or more of three specified sources, including EPA's published water quality criteria. [(40 CFR 122.44(d)(1)(vi)(A), (B), or (C)]. In this case, it is appropriate to use U.S. EPA's water quality criteria. U.S. EPA's ambient water quality criteria for aluminum are applicable to the discharge. The wastewater effluent has been measured at a low pH of 6.8, and the receiving stream hardness has been measured as low as 20 mg/l, which is directly applicable to the criteria. EPA recommends application of the criteria as necessary to protect aquatic life absent a site-specific limitation. The limitation for aluminum is reasonable and necessary to prevent aquatic toxicity from the wastewater discharge.

For Aluminum, U.S. EPA has developed Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life. The recommended Acute or Maximum Concentration (1-Hour Average) for Aluminum is 750 µg/l and the Chronic or Continuous Concentration (4-Day Average) is 87 µg/l, (both expressed as Total Recoverable Aluminum). U.S. EPA recommends that the ambient criteria are protective of the aquatic beneficial uses of receiving waters in lieu of site-specific criteria. In personal communications U.S. EPA water quality staff stated that at low hardness and pH, as is observed from the Dischargers WWTP, the acute and chronic values recommended in the ambient criteria document for aluminum are necessary to protect aquatic life.

Effluent monitoring results submitted by the Discharger (see Table 1 of the Information Sheet) indicated the presence of Total Recoverable Aluminum, in twelve samples, at concentrations of 11.8, 12.8, 25.1, 27.2, 27.4, 28.7, 37.7, 59.0, 61.0, 256, 274, and 404 µg/l. The three highest concentrations were above the Chronic Criteria. New Effluent Limitations for Aluminum have been included in this Order to protect the receiving stream aquatic life beneficial uses based on U.S. EPA's recommended aquatic criteria, and have been established at the Ambient Water Quality Criteria for Aluminum.

Untreated domestic wastewater contains **ammonia**. Ammonia is toxic to aquatic life. Nitrification is a biological process that converts Ammonia to **Nitrate**. There are drinking water MCLs for nitrates. Wastewater treatment plants commonly use nitrification and denitrification processes to remove Ammonia and nitrate from the waste stream. Inadequate or incomplete nitrification or denitrification may result in the discharge of Ammonia or Nitrate to the receiving stream.

The existing Order contains a Receiving Water Limitation for un-ionized Ammonia, that requires that the discharge shall not cause Ammonia in the receiving water to exceed 0.025 mg/l as Nitrogen. The WWTP has had numerous violations of the Receiving Water Limitation. Effluent monitoring results submitted by the Discharger indicate that the concentration of Ammonia in the effluent has exceeded the U.S. EPA Ambient Water

Quality Chronic Criteria for Ammonia on numerous occasions. The Code of Federal Regulations, 40 CFR 122.44(d)(iii), states that when a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above allowable numeric criteria for an individual pollutant, the NPDES permit must contain an Effluent Limitation. Failure to operate the wastewater treatment plant in a nitrification/denitrification mode will result in excessive concentrations of ammonia and nitrate being discharged and degrade the beneficial uses of the receiving stream.

Despite numerous projects over several years, the Discharger has failed to comply with Waste Discharge Requirement limitations and to adequately nitrify the wastewater to achieve compliance with ammonia limitations. The ammonia limitation, and the corresponding compliance monitoring, was established as a Receiving Water Limitation in existing Waste Discharge Requirements, not an Effluent Limitation as is appropriate. The Discharger has purchased water, which has been diverted down the receiving stream in an effort to provide dilution in an attempt to comply with the Receiving Water Limitation for ammonia following failed efforts at achieving adequate nitrification of the wastestream. The Regional Board issued Administrative Civil Liability Order No. 96-086 (ACLO) and Cease and Desist Order No. 96-087 (CDO) in 1996 for violations of previous Waste Discharge Requirements Order No. 92-116. The Discharger was required to pay $25,000 immediately and an additional $25,000 should the Discharger fail to comply with the CDO. A principal component of the water quality problems were due to the ongoing discharge of unacceptably high concentrations of ammonia. The Discharger paid the initial $25,000 and made improvements to the collection system and treatment facilities. However, the new facilities failed to comply completely with the CDO and permit limitations and prohibitions. The Discharger paid the second $25,000 on 4 February 2000 and has recently completed additional plant improvements. A Notice of Violation (NOV) was issued on 13 September 2000 for 25 total effluent limitation violations, including 12 ammonia violations. An NOV was issued on 12 July 2001, for the period August 2000 through April 2001, including receiving water ammonia violations on 16 occasions. Between May 2001 and September 2003, there have been additional violations of the Effluent and Receiving Water Limitations and reporting requirements of Order 97-113, including 31 violations of the Receiving Water Limitation for Ammonia. The receiving water ammonia sampling is not capable of providing sufficient information to determine if the most recently completed project will provide nitrification sufficient to comply with the ammonia Effluent Limitation. The Discharger claims the system is now capable of adequately nitrifying the waste stream.

Atrazine - To protect the receiving stream aquatic life beneficial uses, a new concentration-based Effluent Limitation for Atrazine, based on the Ambient Water Quality Criterion, to implement the Basin Plan narrative toxicity objective is included in this Order.

Chlorine is commonly used as a disinfection agent in the treatment of wastewater. The Discharger currently uses Chlorine for disinfection at the WWTP. Inadequate dechlorination may result in the discharge of Chlorine to the receiving stream. Chlorine is a toxic substance. The use of Chlorine as a disinfectant presents a reasonable potential that it could be discharged to the receiving stream in toxic concentrations.

Phthalate acid esters (PAEs) represent a large family of chemicals widely used as plasticizers, primarily in the production of polyvinyl chloride (PVC) resins. PVC resins are used in such diverse industries as construction, home furnishings, transportation, apparel, and food and medical packaging materials. Phthalates also have non-plasticizer uses in pesticide carriers, cosmetics, fragrances, munitions, industrial oils, and insect repellants. The most widely used phthalate plasticizer is Bis(2-ethylhexyl)phthalate. In the monitoring results submitted by the Discharger (see Table 3 of the Information Sheet), the laboratory reported the presence of Bis(2-ethylhexyl)phthalate in two of five samples, at estimated concentrations of 1.7 and 2.93 µg/l, Diethyl phthalate in one of five samples, at a concentration of 4.57 µg/l, and Di-n-butyl phthalate in one of five samples, at an estimated concentration of 1.0 µg/l. The Bis(2-ethylhexyl)phthalate concentration of 2.93 µg/l and the Diethyl phthalate concentration of 4.57 µg/l were detected in the same sample. The sum of the two PAEs exceeds the Chronic Lowest Observed Effect Level for PAEs of 3 µg/l. The estimated Bis(2-ethylhexyl)phthalate concentration of 2.93 µg/l also exceeds the CTR Criterion of 1.8 µg/l. To protect the aquatic habitat beneficial uses of the receiving waters, a new concentration-based Effluent Limitation for the sum of the PAEs, based on the Ambient Water Quality Criteria for Protection of Freshwater Aquatic Life, U.S. EPA Toxicity Information on the Chronic Lowest Observed Effect Level for PAEs of 3 µg/l (as a 30-Day Average), is included in the proposed Order.

Tributyltin (TBT) in this area is primarily used as a biocide in cooling towers and as an antifouling agent in paints. TBT remains effective over long periods because it is released slowly into the water column over time. To implement the Basin Plan narrative toxicity objective and protect the aquatic beneficial uses of the receiving water, concentration-based Effluent Limitations for Tributyltin, based on the Ambient Water Quality Criteria, are included in the proposed Order.

Alachlor, Nitrate, and Nitrite, and Manganese and MTBE - DHS has adopted Primary Maximum Contaminant Levels (PMCLs) in Title 22 for Alachlor, Nitrate, and

Nitrite, and Secondary MCLs for Manganese and MTBE. To implement the Basin Plan Narrative Chemical Constituent Objective and protect the municipal and domestic supply beneficial use of the receiving water, Effluent Limitations for Alachlor, Nitrate, and Nitrite, Manganese and MTBE are included in the proposed Order.

Bis(2-ethylhexyl)phthalate, Bromodichloromethane, Copper, Dioxins and Furans, Lead, PCBs, Silver, and Zinc - The NTR and the CTR contain numerical water quality standards for many wastewater constituents. The SIP, adopted by the State Water Resources Control Board, contains guidance on implementation of the NTR and the CTR. These Rules contain water quality standards applicable to this discharge. The discharge has a reasonable potential to exceed NTR/CTR standards for Bis(2-ethylhexyl)phthalate, Bromodichloromethane, Copper, Dioxins and Furans, Lead, PCBs, Silver, and Zinc and therefore effluent limits based on the NTR and CTR criteria are included in the proposed permit.

Chloroform – A drinking water criterion of 1.1 µg/l for a 1-in-a-million cancer risk level can be derived using published OEHHA cancer potency factors and standard toxicological assumptions. Effluent monitoring results submitted by the Discharger demonstrate reasonable potential to exceed the Basin Plan narrative Toxicity Objective based on this criterion. Therefore, effluent limits for chloroform at the 1-in-a-million cancer risk level have been included in the proposed permit.

Mass Limits: Mass-based final Effluent Limitations, in lbs/day, are also included in the proposed Order, where practicable, in accordance with the Code of Federal Regulations, 40 CFR 122.45(f). Mass limits using the concentration-based Effluent Limits are calculated using design dry weather as described in the Information Sheet.

Receiving Water Limitations

The proposed Order contains Receiving Water Limitations based on the Basin Plan numerical and narrative water quality objectives for Biostimulatory Substances, Chemical Constituents, Color, Dissolved Oxygen, Floating Material, Oil and Grease, pH, Pesticides, Radioactivity, Salinity, Sediment, Settleable Material, Suspended Material, Tastes and Odors, Temperature, Toxicity and Turbidity.

Objectives/Study - EC And TDS

Agriculture irrigation is a beneficial use of the receiving waters, Rock Creek, Dry Creek, and downstream waters. Domestic and industrial use of water, results in an increase in

the mineral content of the wastewater. The minerals include calcium, sodium, sulfate, and other dissolved salts, including chloride. The salinity of wastewater is determined by measuring EC or TDS, which are parameters used to determine the suitability of wastewater for irrigation. Monitoring results submitted by the Discharger indicated that concentrations of Electrical Conductivity (EC) and Total Dissolved Solids (TDS) exceeded Agriculture Irrigation Goals in the effluent. However, no data was submitted by the Discharger to indicate the Agriculture Irrigation Objectives were exceeded in the Receiving Water. This Order contains a Provision for a study to determine whether the discharge causes the EC and TDS to exceed the Agriculture Irrigation Goals in the Receiving Water. The Provision allows this Order to be reopened if new data indicate Effluent Limitations are necessary.

Collection System

The Discharger's sanitary sewer system collects wastewater using sewers, pipes, pumps, and/or other conveyance systems and directs the raw sewage to the wastewater treatment plant. A "sanitary sewer overflow" is defined as a discharge to ground or surface water from the sanitary sewer system at any point upstream of the wastewater treatment plant. Sanitary sewer overflows are prohibited by this Order. All violations must be reported as required in Standard Provisions. Conveyance facilities (such as wet wells, regulated impoundments, tanks, highlines, etc.) may be part of a sanitary sewer system and discharges to these facilities are not considered sanitary sewer overflows, provided that the waste is fully contained within these temporary storage/conveyance facilities.

The Discharger is responsible for all necessary steps to adequately maintain and operate its sanitary sewer collection system. Therefore, the proposed permit prohibits sanitary sewer overflows and requires the Discharger to take whatever actions are necessary to adequately maintain the collection system.

Pretreatment

U.S. EPA Region IX staff conducted inspections, of significant industrial users (SIUs) and metal finishing operations within the Placer County Sewer Management District No. 1 sewer service area, in May 2003. As a result of those inspections, Carpenter Advanced Ceramics and Sierra Plating were issued Findings of Violation and Administrative Orders CWA-307-9-03-023 (Carpenter Advanced Ceramics) and CWA-307-9-03-024 (Sierra Plating), and Coherent Auburn Division was issued a Request for Information and Self-Monitoring Order CWA-308-9-04-001. Other industries that may discharge constituents of concern are located within the Discharger's service area. The proposed Order includes a Provision requiring the Discharger to develop technically based local limits for industries and an Industrial Pretreatment Program within a year of adoption.